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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,995	12/03/2003	Eduardo Napadensky	P-3099-US3	5199
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PEARL COHEN ZEDEK, LLP 1500 BROADWAY 12TH FLOOR NEW YORK, NY 10036			EXAMINER BERMAN, SUSAN W	
			ART UNIT	PAPER NUMBER
			1711	
DATE MAILED: 05/09/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/725,995

Applicant(s)

NAPADENSKY ET AL.

Examiner

Susan W. Berman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 58-64, 66-74, 80-108 and 112 is/are pending in the application.
- 4a) Of the above claim(s) 58-64, 66-74, 106-108, 112 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 80-105 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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***Inventorship***

Receipt is acknowledged of the Petition under 37 CFR 1.48(b) filed 02-21-2006 requesting that Eliahu M. Kritchman and Avi Cohen be deleted as named inventors. The inventorship has been corrected as requested.

***Elections/Restrictions***

Applicant's election with traverse of Group XI, claims 80-105, in the reply filed on 02/09/2006 is acknowledged.

With respect to the restriction requirement of record, the amended claims are now grouped as follows:

- I. Claim(s) 58-74, drawn to a multi-phase composite material obtained by the method set forth in Group XI, claims 80-105, classified in Class 428, subclass 411.1+.
- II. Claim(s) 80-105, drawn to a method for preparation of a pseudo composite material having a non-homogeneous three-dimensional structure, classified in Class 264, subclass 401.
- III. Claim(s) 106-108, 112, drawn to a three-dimensional printing system comprising a controller to enable producing a first phase and a second phase, classified in Class 700, subclass 96.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the processes as claimed can be practiced by any of the different apparatus as described in the specification or by a materially different stereolithographic apparatus.

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Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed can be used to make a product wherein the layers were deposited by a method other than ink jet printing.

Inventions I and III are related as product by process and apparatus for use in the process for making the product. The inventions are distinct because a three-dimensional printing system can be used to prepare a product other than the multi-phase composite material set forth in Group I. Furthermore, the multi-phase composite set forth in Group I could be obtained using an apparatus comprising at least two different dispensing units without a controller.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper. Because these inventions are distinct for the reasons given above and the search required for each Group is not required for the other Groups, restriction for examination purposes as indicated is proper. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

The traversal of the restriction requirement of record is on the ground(s) that new Groups I-III are all drawn to the same invention and should be examined together. This is not found persuasive because the three groups of claims, as amended, are considered to set forth independent and distinct inventions for the reasons set forth herein above. The different groups of claims present an undue search burden because of their different classification, as shown above, and divergent subject matter, i.e., a multi-phase composite material, a process for preparing a multi-phase composite material and an apparatus for

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carrying out the process. The process claims as written do not require the use of the apparatus set forth in Group III. A multi-phase composite material corresponding to the product by process set forth could be obtained by a different method, such as by ink jet printing.

The requirement is still deemed proper and is therefore made FINAL.

Claims 58-74, 106-108, 112-124 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim.

Claims 1-57, 65, 75-79, 109-111 and 113-114 have been cancelled.

#### ***Response to Amendment***

Non-elected claims 58-64, 66-74, 106-108 and 112 should have been identified with the status identifier "withdrawn, currently amended" or "withdrawn".

The objection to claims because of informalities noted in the previous Office Action is withdrawn.

The provisional rejection under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 and 17-20 of copending Application No. 10/724399 (Gothait et al in US 2005/0069784) is withdrawn. It is agreed that Application No '399 does not claim interface materials that would be expected to form a multi-phase composite material.

#### ***Response to Arguments***

The rejection of claims under 35 USC 102(e) as being anticipated by Napadensky '373 is withdrawn. Applicant points out that Napadensky '373 is a priority document to the instant application.

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The provisional rejection under the judicially created doctrine of obviousness-type double patenting over copending Application No. 09/797869 (Napadensky prepub US 2002/0016386) is withdrawn because, as pointed out by applicant the application has been abandoned.

Applicant's arguments filed have been fully considered but they are not persuasive.

WO 00/11092: Applicant argues that WO '092 discloses dispensing a mixture of a base material, a plasticizing component and a tackifying resin from a single dispenser, while the instant claims recite a method wherein two or more materials are dispensed from two or more dispensers. The mixtures taught by WO '092 are multi-phase mixtures that would be expected to provide a multi-phase composite.

Helsinki: Applicant argues that Helsinki does not disclose dispensing materials that are multi-phase composite materials. This argument is not persuasive because applicant's method, as claimed, requires dispensing two or more materials to form layers comprising one or more phases of the composite material, not dispensing materials that already are multi-phase composite materials. The article produced by the method taught by Helsinki would be expected to comprise at least two layers wherein each layer has at least one phase of the composite.

Cima: Applicant argues that Cima does not disclose all the elements of claim 80. However, no specific argument is made or difference is pointed out.

Yamane et al: Applicant argues that Yamane et al do not disclose all the elements of claim 80. However, no specific argument is made or difference pointed out.

US 2002/0016386: Applicant argues that US '386 does not disclose all the elements of claim 80. However, no specific argument is made or difference is pointed out.

The rejections of record are based on the examiner's consideration of the definition in the present disclosure of "materials" set forth in the instant claims for providing a multi-phase composite as "any composition suitable for building a three-dimensional object".

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 80-105 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what method steps are required to “pre-design a structure” of a multi-phase composite material. With respect to claims 80-96 and 99-105, It is not clear what kinds of “pre-defined properties” are desired, therefore, it is not clear how or with what purpose the structure would be “pre-designed”. The kinds of properties desired and used for guidance in the “pre-designing” step should be clearly set forth. Also, the steps required for “pre-designing” to obtain these properties should be clearly set forth to define the instantly claimed method and distinguish it from methods known in the art. The claim language does not clearly set forth what is intended by a “multi-phase composite material”. It is not clear what is meant by the phrase “each said layer comprising one or more phases of said multi-phase composite material, each said phase comprising one or more of said materials”. What “said materials” are present in “each said phase”? Claim 80, last line after “solidifying said two or more materials” recites “and said second material”. There is no antecedent mention of a second material, so it is not clear what “said second material” is being referred to.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 80-103 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 00/11092. WO 0011092 discloses a method for selective deposition of a modeling material for producing a three-dimensional article from phase change compositions having improved strength and toughness. Several different compositions are taught, including compositions comprising a base material and plasticizer or reactive monomers or a non-reactive polymeric material or a wax material. The modeling materials disclosed have viscosity properties allowing dispensing from a moveable dispensing unit at elevated temperature to provide a flowable liquid to desired locations. The materials can be cured by heating or UV radiation exposure. WO '092 teaches that the invention can be employed in any selective modeling system wherein a phase change material is applied in successive layers as a liquid and subsequently hardens to produce a three dimensional article. See pages 6-7. Components of compositions corresponding to those set forth in the instant claims are taught in pages 7-16. Tackifying resins disclosed appear to meet the requirement for an interface material in instant claims 93-94 (page 5, paragraph 4, and page 14, last three lines). Properties of some of the disclosed cured compositions are taught on pages 21 and 22. An example of curing is taught in Example 13. See WO '092 claims 13-16.

With respect to claim 80, WO '092 does not specifically mention producing a "multi-phase composite material". However, it is the examiner's position that the method disclosed by WO '092 would inherently produce such a material. The reason is that WO '092 teaches producing a three-dimensional structure from compositions comprising a base material that encapsulates the remaining components and/or compositions comprising components such as a filler or wax that would be expected to provide a multi-phase material in a layer. The features of the dependent claims are also taught in WO '092, as pointed out above.

With respect to claims 83-85, WO '092 is not specific with respect to when curing or solidifying is performed. Example 13 discloses building parts on an "Actura 2100" using normal parameters and that



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the parts, tack-free and tough enough for routine handling, could be placed in a UV curing apparatus and exposed to UV. WO '092 is considered to disclose at least partial curing or solidifying immediately after deposition and also after deposition of more than one layer in Example 13. The teaching of WO '092 that parts, as built were tack-free and tough enough for handling, is considered to teach claim 85.

With respect to claims 99 and 100, WO '092 does not mention whether the mechanical strength or elasticity of the composite material is the same or different along one axis compared with another axis in the material. This property is considered to be an inherent property of the method taught by WO '092 since the method steps disclosed correspond to those set forth in the instant claims for providing these properties.

Claims 80-85, 88-94, and 97-105 are rejected under 35 U.S.C. 102(b) as being anticipated by Helinski (5,136,515). Helinski discloses several different embodiments for producing a three dimensional object by jetting at least two different materials into various layers, wherein the second material forms a support for the first material. See columns 2-3. An interface material is considered to be disclosed in column 3, lines 24-35. A composite comprising release layers is considered to be taught in column 3, lines 36-41.

Claims 80-99 and 101-103 are rejected under 35 U.S.C. 102(b) as being anticipated by Cima et al (5,387,380). Cima et al disclose a process comprising depositing a first layer of a powder material and depositing a binder material to selected regions and repeating the steps to form a component. Unbonded powder material is then removed. See column 2, line 55, to column 3, line 20, column 4, lines 12-55, column 9, lines 7-50, column 10, lines 58-68, column 11, lines 49-58, and column 13, lines 9-66.

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Claims 80-98 and 101-104 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamane et al (5,059,266). Yamane et al disclose a method for forming a three-dimensional article wherein a photosetting or thermosetting material is jetted from ink jet heads to a stage, laminated and exposed to light to cure. See column 6, line 60, to column 8, line 21, column 11, line 4; to column 12, line 37, column 13, lines 58-66.

Claims 80-94, 97-98 and 100-104 are rejected under 35 U.S.C. 102(b) as being anticipated by Napadensky in US 2002/0016386, published 02/07/2002. The instant claims 80-105 have an effective filing date of 12/03/2003. The "phase compositions" set forth in the instant claims are defined in the disclosure as "any composition suitable for building a three-dimensional object". Napadensky '386 discloses a method corresponding to the limitations set forth in the instant claims and compositions to use in the method. See paragraphs [0169] to [0177] and claims 35-63.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 80-105 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-42 of U.S. Patent No. US 6,569,373 ( Napadensky).

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Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. This patent issued from the parent application of the instant application but the instant claims were not restricted from the parent application. The differences between the instant claims and the claims of '373 are that the instant claims recite: (1) a "multi-phase composite" and (2) dispensing "two or more materials" while the claims of '373 recite: (1) a "three-dimensional object" and (2) dispensing an "interface material". The "materials" set forth in the instant claims are defined in the instant disclosure as "any composition suitable for building a three-dimensional object", thus the interface materials set forth in '373 correspond to the instantly claimed "materials". The "multi-phase composite" in the instant claims corresponds to the "three-dimensional object" in the claims of '373. It would have been obvious to one skilled in the art at the time of the invention to produce a non-homogeneous three dimensional structure by the method set forth in the claims of US '373 because the method employs two different materials that would be expected to form a non-homogeneous, or multi-phase, object. For instance, Claim 1 of US '373 recites that the first interface material provides a solid form while the second interface material provides a liquid form.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan W. Berman whose telephone number is 571 272 1067. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SB  
4/17/06



Susan W Berman  
Primary Examiner  
Art Unit 1711